

## Abstract

A pulse detonation engine (10) is provided with an  
aerovalue (14) for controlling the pressure of injected  
5 propellants (Ox, Fuel) in an open-ended detonation  
chamber (26). The propellants are injected at such  
pressure and velocity, and in a direction generally  
toward a forward thrust wall end (16) of the detonation  
chamber (26), an aerovalue (14) is formed which  
10 effectively inhibits or prevents egress of the propellant  
from the detonation chamber (26). A shock wave (34)  
formed by the injected propellant acts, after reflection  
by the thrust wall end (16) and in combination with the  
aerovalue (14), to compress and conserve, or increase,  
15 the pressure of the injected propellant. Carefully timed  
ignition (28) effects a detonation pulse under desired  
conditions of maintained, or increased, pressure.  
Termination of the propellant injection serves to "open"  
the aerovalue (14), and exhaust of the combusted  
20 propellants occurs to produce thrust. Alternate  
embodiments of propellant injection mechanisms (12, 112)  
provide pulse valves (24, 122, 124) each having a fixed  
slotted disk (40, 140, 240) and a rotating slotted disk  
(42, 142, 242) to provide the desired high speed valving  
25 of discrete pulses of propellant for injection.